

# SUBMARINE POWER CABLE

**Submarine power cables** are cables for electrical power running through the sea, below the surface.

For transmission of large amounts of electric power through submarine cables, direct current(DC) is preferred, because DC cables require less reactive power than submarine AC cables. As well, for three phase AC-cables three conductors are necessary, while for DC only 1 or 2 conductors are required.

A DC system may use the ground and seawater as a return path for current.

However this cannot be always practiced because of disturbances to magnetic compass systems on vessels crossing the cable and because of ecological effects of electrochemical reactions at the electrodes.

The length of AC cables is restricted by the capacitance between the active conductors and the surrounding earth (or water). If the cable were to be made long enough, the reactive power consumed by the cable would take up the entire current carrying capacity of the conductor, so no usable power would be transmitted.

## **Submarine cables for AC**

- Sweden-Bornholm (110kV)
- Spain-Morocco (380 kV)
- Öresund (380 kV)
- Strait of Messina (380kV), replaced overhead line crossing (Pylons of Messina)
- Isle of Man to England Interconnector (90kV)

## **Submarine cables for DC**

- HVDC Gotland (the first commercial HVDC submarine cable installation)
- HVDC Cross-Channel (Submarine cable between UK and France)
- HVDC Inter-Island (Power line between the islands of New Zealand)
- Konti-Skan (Powerline between Sweden and Denmark)
- HVDC Italy-Corsica-Sardinia (SACOI, Submarine cable link between Italy, Corsica and Sardinia)
- HVDC Vancouver Island (link between Vancouver Island and the Canadian mainland)
- HVDC Hokkaido-Honshu (between Hokkaido and Honshu)
- Cross-Skagerak (between Norway and Denmark)
- Kontek ( between Germany and Denmark)

- Baltic-Cable (between Germany and Sweden)
- Swepol (between Poland and Sweden)
- HVDC Italy-Greece (between Italy and Greece)
- HVDC Leyte - Luzon (between Leyte and Luzon)
- Kii Channel HVDC system (through Kii-channel, Japan)
- Cross Sound Cable (between New York and Connecticut, USA)
- HVDC Moyle (between Scotia and Northern Ireland)
- HVDC Bass-Strait (between Victoria, Australia and Tasmania, Australia)

Source: [http://engineering.wikia.com/wiki/Submarine\\_power\\_cable](http://engineering.wikia.com/wiki/Submarine_power_cable)